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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,226	10/17/2001	Scott MacKay	594-25572-US	5588

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EXAMINER

TAYLOR, VICTOR J

ART UNIT PAPER NUMBER

2863

DATE MAILED: 01/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/981,226

Applicant(s)

MACKAY, SCOTT

Examiner

Victor J. Taylor

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MLW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 26 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-23 is/are allowed.
- 6) ☒ Claim(s) 1 and 24 is/are rejected.
- 7) ☒ Claim(s) 2, 4, 5, 25, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *Office Action*.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The use of the term selecting an "ideal water velocity" in the specification and in the newly amended claims is overly too broad. This "ideal water velocity" comprises the ideal of whatever is ideal and could consist of a fast or slow velocity or any velocity that is ideal or any and all combinations of such that are ideal. For example, see the apparent horizontal velocity in line 40 in column 5 and is the quantity deducted from the velocity analysis and consists of an ideal velocity as computed by the equation in line 40 as well the difference velocities as computed by the horizontal and vertical velocities that are "ideal" and important and "ideal" for converting the travel times. Appropriate correction is required.

Response to Arguments

2. Applicant's arguments filed 31 October 2003 have been fully considered but they are not persuasive. In response to applicant's arguments, and in the recitation are arguments that the limitations of "claims 1 and 24 have been amended to include the limitations of dependent claims 3 and 26" and includes the addition of using the limitation for an "ideal water velocity" for determining a vertical time correction ".
3. The applicant cancels claims 3 and 26. The original claim limitations for dependent claims 3 and 26 are as follows, and are further dependent on "the method of

claim 1 wherein determining an observed velocity further comprises determining Vobs (The velocity observed) from velocity analysis of a seismic gather". These objected/to limitations differ from the amended limitations of "determining an observed velocity from velocity analysis of a seismic gather and selecting an ideal water velocity" with the addition of the new limitation of an ideal water velocity. This ideal water velocity could consist of many various water velocities that are ideal and as objected to in the above objections.

In the previous office action claims 2-5 depend on Claim 1 and claims 25-28 depend on claim 24 and were objected/to as allowable if rewritten with the limitations of claims 3-5 combined with the independent limitations of claim 1 and rewritten with the limitations of claims 25-28 combined with the limitations of claim 24 as specified in the previous office action. These objections to the claims have not been addressed in the response of 31 October 2003. Corrections are required.

In additional the previous cited art of Schneider et al discloses the low seismic velocity water layer using analytic ray tracing to remove distortion and teaches a seismic water velocity layer in the abstract combined with elements of the water velocity found in figure 1 and teaches the dynamic equations and the seismic water velocity in line 10 of column 4 and in figure 6 that could comprise the "ideal water velocity" and the previously cited art of Chambers discloses the thermocline inversion layer 26 with the with multiple seismic velocities 27 in figure 3 and discloses water velocity the surface line 45 determined from the water arrivals of the seismic signals measuring time differentials in lines 45 of column 5 in combination with the complete patent.

Prior Art

4. The prior art of record and not relied upon is considered pertinent to the applicant:

I. Kalkomey, US 4,577,297 previously cited in paper 5 of record is cited for the method of velocity processing to correct the seismic reflection signals having undulating water bottom velocity distortions for velocity matching between the two layers.

II. Schneider U. S. Patent Number 5,532,976 previously cited in paper 5 of record is cited for the spatial trace seismic velocity processing and determining the velocity and travel time with velocity modeling in lines 10-40 of column 3 and the low seismic velocity of the water and the low seismic velocity of the mud water and velocity equation processing to correct the hyperbolic distortion.

III. Sanders et al., U. S. Patent Number 4,935,903 previously cited in paper 8 of record is cited for the seismic vertical system processing and the vertical angle reflections in figure 2 using the travel time equation and velocity functions $V(t)$ in lines 1-65 in columns 5 and 6.

IV. Chambers U. S. Patent 4,992,993 previously cited in paper 5 of record is cited for the water velocity and water bottom reflections.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Corcoran in US 4,839,869.

With regard to claim 1, concerning limitation of a., Corcoran discloses the limitation of:

a. Determining an observed velocity in, (the velocity model of the gather data in line 34 of column 6 and figure 1-C and in the apparent V.sub.V vertical velocity in line 41 of column 5 and in combination with the complete patent.) The claim limitations are underlined with the disclosures in the art in the brackets. And,

b. Corcoran further discloses the limitation of determining a vertical time correction using said observed velocity in, (the converting from vertical velocity travel time to depth from the Vv vertical velocity in lines 40-50 of column 5.) The claim limitations are underlined with the disclosures in the art in the brackets. And,

c. Corcoran further discloses the limitation of apply said vertical time correction to seismic data before normal move-out in, (by applying the dynamically corrections and taking into account an appropriate shear and correction velocity and travel time and then stacking the corrected data or otherwise processed in lines 34-40 of column 6 and

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discloses velocity gather with dynamic correction before stacking in lines 10-35 of column 7.) The claim limitations are underlined with the disclosures in the art in the brackets.

With regard to claim 24, and concerning limitation,

a. The arguments applied to claim 1 are applied to claim 24 for their common features and for the common features of the observed velocity and the converted wave data in lines 10-40 of column 7 and for the velocity model and dynamic correction of the seismic in lines 20-22 of column 7. Determining an observed velocity in, (the velocity model of the gather data in line 34 of column 6 and figure 1-C and in the apparent $V_{\text{sub}V}$ vertical velocity in line 41 of column 5 and in combination with the complete patent.) The claim limitations are underlined with the disclosures in the art in the brackets. And,

b. Corcoran further discloses the limitation of determining an angle dependent time correction using said observed velocity in, (the angle change in the vertical velocity RP in figure 2 from converting from vertical velocity travel time to depth from the V_v vertical velocity in lines 40-50 of column 5.) The claim limitations are underlined with the disclosures in the art in the brackets.

c. Corcoran further discloses the limitation of apply said angle dependent time correction to seismic data before normal move-out in, (in figure 2 by applying the dynamically corrections and taking into account an appropriate shear and correction velocity and travel time and then stacking the corrected data or otherwise processed in lines 34-40 of column 6 and discloses velocity gather with dynamic correction before

stacking in lines 10-35 of column 7.) The claim limitations are underlined with the disclosures in the art in the brackets.

Allowable Subject Matter

1. Claims 6-15, and 16-23 are allowed.
2. The following is an examiner's statement of reasons for allowance: The applicants amendments and arguments of record in paper 7 on June 9, 2003 convinces the examiner that the velocity time corrections prior to NMO for the water velocity dynamic correction and angle dependent time correction in claim 6 and in claim 16 with the processing steps in seismic data processing is not found in the cited art of record.

It is these arguments of record in paper 7 and these limitations of record expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Claims 7-15, which are dependent on the allowed independent claim 6 are allowed at least for the reasons cited above.

Claims 17-23, which are dependent on the allowed independent claims 16 are allowed at least for the reasons cited above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Claim Objections

3. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form with the claim limitation of determining the observed velocity using the equation for the velocity observed with and including all of the limitations of the base claim and any intervening claims and with the steps of determining the observed velocity using the velocity analysis of the seismic gather with and including all of the limitations of the base claim and any intervening claims and with the steps for determining the time-dependent and offset-dependent sample corrections with and including all of the limitations of the base claim and any intervening claims and with the steps of using the vertical time correction and the change in time angle formulation using the selected ideal velocity with and including all of the limitations of the base claim and any intervening claims.

4. Claims 25-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form with the claim limitation of determining the observed velocity using the equation for the velocity observed with and including all of the limitations of the base claim and any intervening claims and with the steps of determining the observed velocity using the velocity analysis of the seismic gather with and including all of the limitations of the base claim and any intervening claims and with the steps for determining the time-dependent and offset-dependent sample corrections with and including all of the limitations of the base claim and any intervening claims and with the steps of using the vertical time correction and the

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change in time angle formulation using the selected ideal velocity with and including all of the limitations of the base claim and any intervening claims.

This Action is Made Final

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, This action is made final. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 703-305-4470. The examiner can normally be reached on 8:00 to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 703-308-3126. The fax phone numbers


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for the organization where this application or proceeding is assigned are 703-746-4509 for regular communications and 703-308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.


Victor J Taylor
Examiner
Art Unit 2862
January 20, 2004

VICTOR J. TAYLOR
PATENT EXAMINER


John Corley
Supervisory Patent Examiner
Technology Center 2000